



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/785,054	02/25/2004	Jung Ho Song	P69538US0	8562
43569	7590	12/28/2005		
MAYER, BROWN, ROWE & MAW LLP 1909 K STREET, N.W. WASHINGTON, DC 20006			EXAMINER DICKEY, THOMAS L	
			ART UNIT 2826	PAPER NUMBER

DATE MAILED: 12/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/785,054

Applicant(s)

SONG ET AL.

Examiner

Thomas L. Dickey

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5,10 and 12-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3-5,10 and 12-16 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/05/05</u> . | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2826

DETAILED ACTION

1. The amendment filed 12/05/2005 has been entered.

Claim Objections

2. Claims 1,3-5,10, and 12-16 are objected to because of the following informalities:

Regarding claims 1, 10, and 14, the phrase "may be" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Appropriate correction is required. It is suggested, assuming applicant intends the limitation(s) following the phrase to be unequivocally understood to be part of the claimed invention, that the language –is– be substituted for the objected to language, “may be,” in claims 1, 10, and 14.

Allowable Subject Matter

3. Claims 1, 3-5, 10, and 12-16 are allowed over the references of record because none of these references disclosed or can be combined to yield the claimed invention such as a semiconductor laser, comprising a substrate etched into a mesa structure; an active layer formed on the mesa structure and being a core of a waveguide; a first clad layer formed on the active layer; a current blocking layer formed on the etched substrate

Art Unit: 2826

in both sides of the mesa structure; an etch-stop layer formed on the first clad layer and the current blocking layer; a second clad layer formed on the etch-stop layer being located on an upper portion of the mesa structure with a predetermined width; an ohmic contact layer formed on the second clad layer; a first electrode contacted with the ohmic contact layer; and a second electrode formed on the bottom of the substrate, wherein the current blocking layer is (applicant's claims, as of 12/18/05, recite, "may be," however the intended meaning appears to be "is") formed by a first p type, an n type, and a second p type semiconductor layers, as recited in claims 1, 10 and 14.

For example, KISH ET AL. 2005/0151144 discloses a semiconductor laser, comprising a substrate 12-13-14A etched into a mesa structure 28A; an active layer 16 formed on the mesa structure 28A and being a core of a waveguide 10N; a first clad layer 18A formed on the active layer 16; a current blocking layer 77 formed on the etched substrate 12-13-14A in both sides of the mesa structure 28A; an etch-stop layer 70-72 formed on the first clad layer 18A (part 70 is the part of etch stop layer 70-72 on first clad layer 18A) and the current blocking layer 77 (part 72 is the part of etch stop layer 70-72 on current blocking layer 77); a second clad layer 74 formed on the etch-stop layer 70-72 being located on an upper portion of the mesa structure 28A with a predetermined width; an ohmic contact layer 76 formed on the second clad layer 74; a first electrode 22 (seen in figure 1) contacted with the ohmic contact layer 76; a second electrode 26 (seen in figure 1) formed on the bottom of the substrate 12-13-14A. Kish et al.

Art Unit: 2826

further discloses that the current blocking layer may be formed by a first p type semiconductor layer. But Kish et al. neither discloses nor suggests a current blocking layer formed by a first p type, an n type, and a second p type semiconductor layers, as recited in claims 1, 10, and 14.

For another example, MORI ET AL. 5,311,534 discloses a semiconductor laser, comprising a substrate 506; an active layer 501 formed directly on the substrate 506 and being a core of a waveguide; a first clad layer 504 formed on the active layer 501; a current blocking layer 507 formed from a first p type, an n type, and a second p type semiconductor layers, on the etched substrate 506 in both sides of the mesa structure; an etch-stop layer 503; a second clad layer 508 formed on the etch-stop layer 503 being located on an upper portion of the mesa structure with a predetermined width; an ohmic contact layer 509 formed on the second clad layer 508; a first electrode 510 contacted with the ohmic contact layer 509; and a second electrode 511 formed on the bottom of the substrate 506. However, Mori et al's etch-stop layer 503 is not formed on first clad layer 504 and current blocking layer 507, and a fundamental purpose of Mori et al's invention would no longer be served were etch-stop layer 503 to be moved so that it lay on first clad layer 504 and current blocking layer 507.

Ultimately, it is the incorporation of a current blocking layer, formed by a first p type, an n type, and a second p type semiconductor layers, into a mesa-type semiconductor laser, having an etch-stop layer formed on a first clad layer as well as being formed on

Art Unit: 2826

said p-n-p current blocking layer, that renders the claimed invention novel and non-obvious.

Conclusion

4. This application is in condition for allowance except for the following formal matters:

Objections to claim language set forth in section 2, above.

Prosecution on the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire TWO MONTHS from the mailing date of this letter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas L. Dickey whose telephone number is 571-272-1913. The examiner can normally be reached on Monday-Thursday 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J. Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2826

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'T. Dickey', with a large, sweeping initial 'T' and a stylized 'D'.

Thomas L. Dickey
Patent Examiner
Art Unit 2826
12/05